CLAIMS

What is claimed is:

1. A large scale integrated circuit (IC) comprising:

a light sensing device to produce a signal in response to sensing light;

an optic function subcircuit integrated on the IC; and

a switch integrated on the IC and connected to the light sensing device and to the optic function subcircuit to activate the optic function subcircuit when light is sensed.

2. The circuit of Claim 1 wherein the light sensing device is a phototransistor.

3. The circuit of Claim 1 wherein the optic function subcircuit is an optical modulator.

4. The circuit of Claim 1 wherein the optic function subcircuit is an optical receiver.

5. The circuit of Claim 1 further comprising a light sensing circuit between the light sensing device and the switch for amplifying and conditioning the light sensing signal.

6. The circuit of Claim 5 wherein the light sensing circuit comprises a current mirror to detect the sensing signal and an amplifier to amplify the detected sensing signal.

7. The circuit of Claim 1 wherein the switch comprises a logic gate coupled to the light sensing device and to an input to the optic function subcircuit to alternately enable and disable the input to the optic function subcircuit.

8. The circuit of Claim 1 wherein the switch is connected to activate the power supply of the optic function subcircuit

9. The circuit of Claim 1 wherein the switch is connected to enable the clock input to the optic function subcircuit.

10. A computer system comprising:

a circuit card;

an optical interface on the circuit card: and

a microprocessor on the circuit card coupled to the optical interface, the microprocessor having a light sensing device coupled to the optical interface to produce a signal in response to sensing light through the optical interface, an optic function subcircuit, and a switch connected to the light sensing device and to the optic function subcircuit to activate the optic function subcircuit when light is sensed.

11. The system of Claim 10 wherein the light sensing circuit comprises a current mirror in which one side of the mirror includes the photodetector and the other

side of the mirror comprises a slow transistor, the gate of which is connected to the output of the photodetector.

12. The system of Claim 10 wherein the switch comprises a gate connected to the optic function subcircuit and to the clock signal of the optic function subcircuit so that the clock signal is supplied to the optic function subcircuit when the photodetector is activated.

13. The system of Claim 10 wherein the switch comprises a transistor coupled across the power supply to the optic function subcircuit, the gate of which is connected to the amplifier so that the power supply is enabled when the photodetector is activated.

14. A method comprising:

receiving light at a light sensing device of an integrated circuit (IC);

generating a light sensing signal in the IC in response to the received light;

activating a switch integrated in the IC in response to the light sensing signal to activate an optic function subcircuit that is integrated in the IC.

15. The method of Claim 14 wherein receiving light comprises receiving light directed at an optical input/output port.

16. The method of Claim 14 wherein generating a light sensing signal comprises amplifying and conditioning a photodetector output to remove short term transients.

17. The method of Claim 14 wherein activating a subcircuit comprises enabling a clock circuit.

18. The method of Claim 14 wherein activating a subcircuit comprises providing an enable signal to an enable port of the subcircuit.

19. The method of Claim 14 wherein activating a subcircuit comprises enabling a power supply to the subcircuit.

20. A large scale integrated circuit (IC) comprising:

a light sensing device to produce a sense signal in response to sensing light;

a low power light sensing circuit integrated on the IC substrate coupled to the light sensing device and maintained in an active state to amplify and condition the sense signal;

an optical modulator integrated on the IC substrate and maintained in a minimum power state;

a photodetector independent of the light sensing device, coupled to the optical modulator to provide received optical signals to the modulator for demodulation;

a diagnostic I/O system integrated on the IC substrate and coupled to the optical modulator to allow optical signals to be used to communicate diagnostic protocols with the IC;

a switch integrated on the IC substrate connected to the light sensing circuit to receive the sense signal from the light sensing device and connected to the optical modulator to produce an enable signal to activate the optical modulator from a minimum power disabled state to a powered enabled state when light is sensed by the light sensing device.

21. The circuit of Claim 20 wherein the light sensing device is a phototransistor.

22. The circuit of Claim 20 wherein the optical modulator is coupled to an optical receiver.

23. The circuit of Claim 20 wherein the light sensing circuit comprises a current mirror to detect the sensing signal and an amplifier to amplify the detected sensing signal.

24. The circuit of Claim 20 wherein the switch comprises a logic gate coupled to the light sensing device and to an input to the optic function subcircuit to alternately enable and disable an input to the optical modulator.

25. The circuit of Claim 20 wherein the switch is connected to couple a power supply to the optical modulator.

26. The circuit of Claim 20 wherein the switch is connected to enable a clock input to the optical modulator.

27. A circuit comprising:

a photodetector integrated on a large scale integrated circuit (IC);

a light sensing circuit coupled to the photodetector, integrated on the IC substrate and maintained in an active state to amplify and condition the photodetector output signal;

a switch integrated on the IC substrate coupled to the light sensing subcircuit to receive the photodetector output signal and produce an enabling signal to allow power to be supplied to an optical modulator integrated on the IC substrate in response to detection of a signal from the light sensing circuit.

28. The circuit of Claim 27 wherein the switch comprises a gate connected to the optical modulator and to a clock signal of the optical modulator integrated on the IC substrate so that the clock signal is supplied to the optical modulator when the photodetector is activated.

29. The circuit of Claim 27 wherein the switch comprises a transistor coupled across the power supply to the optical modulator , the transistor having a gate connected to the amplifier so that the power supply is enabled when the photodetector is activated.